LABORATORY CHARACTERISTICS OF ACUTE VIRAL HEPATITIS A IN THE REPUBLIC OF KARAKALPAKSTAN

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Relevance of the topic. Relevance. In the Republic of Karakalpakstan, acute hepatitis A (HAV) continues to represent a key public health challenge, driven primarily by seasonal environmental dynamics, variations in local water supply quality, and regional sanitation conditions. While widespread pediatric immunization campaigns have reduced overall incidence, periodic seasonal outbreaks persist among both children and adults who lack protective anti-HAV antibodies. Hepatitis A typically follows an acute, self-limiting course, but clinical severity and the degree of hepatocellular injury can vary substantially depending on patient age, metabolic status, and promptness of medical intervention. Despite its high prevalence during seasonal spikes, detailed regional studies analyzing the complete hematological, biochemical, and cholestatic profiles of patients with acute HAV infection in Karakalpakstan remain limited. A comprehensive evaluation of these parameters is essential for evaluating hepatic cytolysis, monitoring cholestasis, and preventing rare but severe liver complications. This study aims to provide an updated assessment of the clinical characteristics and laboratory markers in patients with acute hepatitis A in the regional environment of Karakalpakstan.

Materials and Methods. A prospective observational study was conducted at the Republican Infectious Diseases Hospital of Karakalpakstan between 2023 and 2025. The study cohort comprised 218 patients presenting with acute viral hepatitis A. Infection with HAV was laboratory-confirmed in all subjects via enzyme-linked immunosorbent assay (ELISA) positive for anti-HAV IgM antibodies. Patients with serological evidence of viral co-infections (HBsAg, anti-HCV, or anti-HEV positivity), pre-existing chronic liver disease, toxic hepatopathy, or autoimmune liver disease were strictly excluded. Venous blood samples were drawn within 24 hours of hospital admission. Laboratory testing included a complete blood count (hemoglobin, leukocytes, ESR), liver function tests (alanine aminotransferase, aspartate aminotransferase, total and direct bilirubin, alkaline phosphatase, gamma-glutamyl transferase), serum albumin, and coagulation parameters (prothrombin index and international normalized ratio). Abdominal ultrasonography was performed to evaluate liver dimensions and parenchymal echogenicity. Statistical processing was executed using IBM SPSS Statistics

version 26, reporting continuous values as mean ± standard deviation and categorical values as percentages ($p < 0.05$).

Results. Among the 218 confirmed acute hepatitis A patients, 62 (56.4%) were male and 48 (43.6%) were female, with a mean age of 24.6 ±8.4 years (range: 18–52 years). The most frequent clinical manifestation was scleral and cutaneous icterus, observed in 96 cases (87.3%). Pre-icteric and icteric symptoms included marked asthenia and fatigue in 88 cases (80.0%), dyspeptic symptoms (nausea, loss of appetite, vomiting) in 75 cases (68.2%), pyrexia during the early onset in 59 cases (53.6%), and right upper quadrant abdominal discomfort in 61 cases (55.5%). Ultrasonography demonstrated hepatomegaly with diffuse parenchymal changes in 81 patients (73.6%) and reactive splenomegaly in 18 patients (16.4%).

Laboratory evaluation on admission revealed significant hepatocellular injury characterized by marked cytolysis. Serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels were substantially elevated, averaging 345 ±112 U/L and 268 ±95 U/L, respectively. Hyperbilirubinemia was observed in 92 patients (83.6%), with mean total bilirubin reaching 6.2±2.4 mg/dL and mean direct bilirubin measured at 3.4±1.1 mg/dL. In addition, markers of cholestasis showed moderate elevations, with alkaline phosphatase (ALP) averaging 210±58 U/L and gamma-glutamyl transferase (GGT) reaching 98±32 U/L. Serum albumin levels were largely preserved, with hypoalbuminemia (<35 g/L) detected in only 12 subjects (10.9%), confirming preserved protein-synthetic hepatic function in the majority of acute HAV cases. Coagulation profiles remained within safe thresholds for most participants; however, a slight elevation in INR (>1.2) and reduced PTI (<70%) were noted in 8 patients (7.3%), warranting close monitoring for severe acute liver injury. Complete blood count analysis showed mild leukopenia or normal leukocyte counts with an elevated ESR (18.4 ±6.2 mm/h) in 45 patients (40.9%).

Conclusion. In the Republic of Karakalpakstan, acute hepatitis A primarily affects young adults and presents with classical icteric and astheno-dyspeptic syndromes accompanied by marked transaminase elevation (ALT/AST) and conjugated hyperbilirubinemia. Liver synthetic and coagulation functions remain largely intact throughout the acute phase. Early laboratory evaluation focused on cytolytic and cholestatic markers is key for effective monitoring, favorable prognosis, and outpatient recovery planning.

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